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ABSTRACT

Differences between community college faculty who are doctorally prepared and those who are not in terms of professional values, beliefs, interests, competence, and perceptions of the college environment are discussed, with note taken as to whether these differences persist when discipline and timing of graduate study are taken into account. The extent to which variations in faculty behavior are due to doctoral preparation are examined. Data from a national survey conducted by the National Center for Research to Improve Postsecondary Teaching and Learning were analyzed. A survey was sent to full-time faculty with regular appointments in eight disciplines. A total of 122 items measuring educational beliefs/values, personal competence, career interests and satisfaction, perceptions of the organization, and professional effort and behavior were used for analysis. Results include the following: several of the belief/perception variables that had significant effects on the teaching behaviors were not affected by field or doctoral preparation measures; generalizations about the negative consequences of hiring doctorally prepared faculty are not fully supported (since doctoral preparation did influence teaching behavior but the effects were usually indirect); doctorally prepared faculty report greater involvement in grant preparation, journal editing, association activities, research, and journal publication; and doctorally prepared people are not dissatisfied with their careers as community college faculty members. Appended are: factor names, variable names, and loading factors; tables; and figures. Contains 18 references. (SM)

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Faculty in Community Colleges:
Differences Between the Doctorally and Non-Doctorally Prepared

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Introduction/Objectives

Although the relative emphasis on mission priorities in community colleges has been a topic of debate since their inception (Deegan, Tillery, and Associates, 1985; Cohen & Brawer, 1982; Gleazer, 1980), it is generally understood that these colleges are "teaching institutions" (Lawrence, Blackburn & Yoon, 1987; Deegan, Tillery, et al., 1985; Cohen & Brawer, 1982; Gleazer, 1980). Early on, particularly when the community colleges were growing rapidly, those involved with community colleges became increasingly concerned about the sort of preparation community college faculty members should have. Until the 1970s, most of the faculty had public school teaching experience, and a master's degree from an academic department was the typical level of preparation (Clark, 1987; Cohen & Brawer, 1982). Beginning in the 1970s, however, with a shrinking job market that brought a decline in the number of faculty openings in community colleges, more faculty began to come from other community colleges and from the trades; they also came directly from doctoral programs (Cohen & Brawer, 1982).

Arguments against hiring individuals who are doctorally prepared may be found as early as 1931. Nevertheless, by 1975 the percentage of community college faculty with doctorates had climbed to 14%. This change has been attributed to both changes in hiring practices and incentives to earn the degree while on the job (Cohen & Brawer, 1982; Cohen & Brawer, 1987). By 1983, 27% of the community college liberal arts faculty held doctorates (Cohen & Brawer, 1987), just one of several indications that the demographic composition of community college

faculty had begun to change (Lawrence, et al., 1987; Cohen & Brawer, 1982).

Some individuals, assuming the quality of education would be enhanced by a faculty with greater academic preparation, were pleased by the influx of doctorally-prepared faculty (Cohen & Brawer, 1982). Others, however, voiced concern that the unique missions of the community colleges might be threatened by the addition of faculty prepared primarily as researchers. The issue was whether they would share the teaching values and commitment to teaching and service activities that traditionally characterized community college faculties (Clark, 1987; Oromaver, 1983; London, 1978). Still others, opposing the practice of offering higher pay scales to Ph.D.s, argued that the quality of teaching offered by doctorally-prepared faculty was no better than that offered by the faculty without the degree (Cohen & Brawer, 1977).

In this context, we will focus our study on several interrelated questions:

1. Are there differences between community college faculty who are doctorally prepared and those who are not in terms of their professional values, beliefs, interests, competence, and perceptions of the college environment? Do these differences persist when discipline and timing of graduate study are taken into account?

2. To what extent are variations in faculty behavior due to doctoral preparation?

Theoretical Perspective

Over the past 20 years, much has been said and written about the job market in higher education for Ph.D.s--particularly for those whose degrees are in the traditional humanities and social science fields such as English, history, political science, and psychology (London, 1978; Willie & Stecklein, 1982; Oromaver, 1983). Many Ph.D.s, unable to get jobs elsewhere in higher education, turned to community colleges to maintain, although in modified form, both the intellectual commitment and the accompanying self-image that the unavailable college or university career had promised (London, 1978; Willie & Stecklein, 1982; Austin & Gamson, 1983; Oromaver, 1983). Further, a career in the community college also offered a unique opportunity for a scholar who preferred teaching over research; there he or she could earn a higher salary, find better working conditions, and gain more prestige and status than in the public schools (Deegan, et al, 1985). Higher salaries and greater prestige also served as incentives for community college faculty to seek advanced degrees (Cohen & Brawer, 1987).

London (1978) believes that the Ph.D.s who joined the community college faculty ranks as an alternative to positions in four-year colleges and universities may have experienced intense disappointment in the turn that their careers had taken. Consequently, these faculty members set about redefining themselves and their careers in order "to deflect, minimize, or rationalize that disappointment. In their attempted redefinitions, they infused their new role with values previously unappreciated;" they devalued research and scholarly activity and emphasized

"quality, humanistic teaching" (London, 1978). In this light, then, an analysis of the similarities and differences between community college faculty with and without Ph.D.s should yield a Ph.D. group that has, for all intents and purposes, redefined its values and fully accepted the values of the community colleges where they now work.

Oromaver (1983), on the other hand, working from social systems theory, suggests that the individual faculty members bring their own role perceptions and expectations to their community college faculty positions. These perceptions and expectations have been influenced by the process by which these individuals gained the values, attitudes, norms, knowledge, and skills needed to perform the roles of doctorally-prepared faculty members. Oromaver (1983) found that faculty who hold the doctorate, or are working towards it, attach more importance to the scholarly and professional service aspects of their role than do their non-Ph.D. colleagues. He contends that the Ph.D.s will retain the values to which they have been socialized by their graduate programs and asserts that this graduate school process has permanently influenced their perceptions and their expectations of their institutions. Both Cohen and Brawer (1987) and Clark (1987) support this view, and Clark observes ". . . a disjuncture exists between the intense specialization of graduate school preparation and the generalist performance demanded in job assignment." One would suspect, then, that if these researchers are correct, the Ph.D. faculty would be more interested in research, more active professionally, perhaps less concerned about students, but more importantly, less satisfied with their institutions, and less sure that they had been successful in their careers.

In addition to differences in academic preparation, Brim (1966) argues that one's earlier socialization is often inadequate to handle roles that an individual will be expected to assume in the future. Further, he points out that new roles that an individual must learn may not build upon previous roles. In fact, these new roles may even conflict with prior or concurrent learning. The faculty who obtain Ph.D.s prior to their appointments at the community college may reflect the disjuncture that Brim describes. On the other hand, those community college faculty who pursue doctoral degrees concurrently with their appointments may experience discontinuity, i.e., conflict between the values and norms of their doctoral programs and those of their employing institutions.

Differences in academic discipline are also frequently cited as causing variations in faculty perceptions, attitudes, beliefs, and behaviors (Bowen & Schuster, 1986; Finkelstein, 1984). Biglan (1973) attributes these differences to the structural characteristics of academic tasks. Yet another reason for disciplinary distinctiveness may be the socialization process that takes place in graduate school. Wilson, Gaff, Dienst, Wood, & Bavry (1975), reporting Heiss's findings (1968), indicate that graduate education socializes faculty into specific disciplines, not into the overall role of a faculty member.

If Heiss is correct that socialization into disciplines is stronger than socialization into the total faculty role, then there are significant implications for community college faculty in particular. These faculty are teaching in environments that not only emphasize teaching but often require them to be committed to broad fields that encompass several disciplines (Cohen & Brawer, 1977). The demands of a lower-division curriculum do not require faculty to keep up with the latest

developments in their fields in the same way that faculty teaching at the upper-division and graduate levels must. Furthermore, teaching loads and class schedules make it difficult for faculty to interact with colleagues in their disciplines and to conduct research on a regular basis. This disparity between socialization and work environment may create role conflict and stress for these professors--particularly for those with Ph.D.s who are likely to have been more intensely socialized into their disciplines than their non-Ph.D. colleagues. Consequently, with a growing number of Ph.D.s in community colleges (Cohen & Brawer, 1982), role conflict for these faculty may become increasingly problematic.

Method/Data Sources

Data from Faculty at Work, a national survey conducted by the National Center for Research to Improve Postsecondary Teaching and Learning (NCRIPTAL), were analyzed. The stratified random sample, drawn in proportion to the distribution of professors across nine Carnegie Classification Categories (1976), corresponds to the national distribution of faculty members across institutional types.

The survey was sent between November 1987 and January 1988 to full-time faculty with regular appointments in eight disciplines: history and English, biology, chemistry, and mathematics, and political science, psychology, and sociology. The assumption was that these eight disciplines represent a cross section of the liberal arts and sciences found at most colleges and universities. The survey was distributed to 8,130 faculty members and was completed by 3,972 respondents, 857 of

whom were faculty in community colleges (NCRIPTAL Technical Report, 1989).

In this study, a total of 122 items measuring educational beliefs/values, personal competence, career interests and satisfaction, perceptions of the organization, as well as professional effort and behavior were selected for analysis. The survey questions eliciting faculty members' educational beliefs/values dealt with their degree of concern with different student learning outcomes and their personal commitment to teaching, research, and service. Indicators of personal competence required respondents to rate themselves on a series of professional skills (e.g., lecturing, working with students) and to indicate how much influence they thought they had on students and on organizational decisions. The career satisfaction measures focused on personal satisfaction with being a faculty member, general feelings about their particular institution, self-assessment of career success, as well as satisfaction with salary. Survey items about the faculty members' perceptions of faculty colleagues, students, and institutional administrators, the employing institution's emphasis on selected professional skills and behaviors, and its overall priorities were considered perceptions of the organizational environment. Finally, faculty reports of the frequency with which they engaged in a variety of activities and the amount of effort they gave to teaching, research, scholarship, and service were taken to represent faculty role behaviors.

Analysis/Results

The overall goal of the study was to identify differences between community college faculty members who were doctorally prepared and those who were not in terms of their educational beliefs/values, personal competence, career satisfaction, perceptions of their employing institution, and professional behavior. Furthermore, we were interested in knowing if (a) the impact of graduate preparation would persist when field of preparation and timing of graduate study were taken into account and whether (b) the influence of doctoral preparation on behavior was greater than individual beliefs/values, personal competence, satisfaction, and organizational perceptions.

Varimax factor analysis was used to create measures for each of the five variable categories described above. A total of 42 factors emerged: 11 representing beliefs/values, 6 for personal competence, 2 for career satisfaction, 10 for perceptions of the organizational environment, and 13 for behavior. (See Appendix A for a summary of the factors.)

The sample was subdivided into several subgroups based on respondents' field of teaching and doctoral preparation. One-way analyses of variance and t-tests were used to identify significant differences between faculty members with and without doctorates, between those who had obtained the degree before and after their current appointment at a community college, and between Ph.D.s and non-Ph.D.s within field groups. Hierarchical multiple regression analyses were run to assess (a) the effects of field and doctoral preparation on beliefs/values, personal competence, sense of satisfaction as a

community college faculty member, perceptions of the organizational environment, and professional behavior and (b) to evaluate the impact of the educational preparation, satisfaction, and other perceptual variables on the faculty members' teaching, research, and service behavior.

Sample. Among the 857 respondents[1], 232 (27.1%) had earned doctoral degrees; 113 (55.1%) of these faculty members had completed their studies prior to their employment at the current community college and 92 (44.9%) had finished the degree after being appointed. A full third (287--33.5%) of the community college faculty in this sample received their highest academic degree from a research university; 111 (38.6%) of this third received the Ph.D. from a research university as well. The respondents were distributed across the disciplines as follows: English, 240 (28.4%); history, 82 (9.7%); biology, 108 (2.8%); chemistry, 60 (7.1%); mathematics, 160 (18.9%); political science, 35 (4.1%); psychology, 63 (7.4%); and sociology, 51 (6.0%). For the purpose of analysis, these disciplines were combined to create three fields: humanities (English and history), social sciences (political science, psychology, and sociology), and natural sciences (mathematics, biology, and chemistry). The faculty with the Ph.D. were distributed across fields as follows: humanities--95 (31.8%), social sciences--44 (30.8%), and natural sciences--66 (22.8%).

Differences between Faculty Subgroups. The standardized factor means for faculty from the three different fields, for faculty who completed the Ph.D. before and after joining their present institution,

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1 The number of institutions represented in the sample was 55.

and from the same field with or without the Ph.D., are summarized in Table 1.

Faculty in different fields varied in their beliefs, particularly their personal commitment to teaching and research, devotion to the goal of intellectual development for students and dedication to the liberal arts, and valuation of individualized instruction. Field differences also emerged in faculty members' assessments of their own competence--specifically with regard to their ability to affect student outcomes, to succeed at traditional research activities (e.g., publishing, obtaining grants), and to influence a variety of department/unit-level decisions. Regarding overall satisfaction with their careers (general feelings about the institution, likelihood of choosing the faculty career again, and self-assessment of success compared to like faculty), these faculty differed by field as well. Further, in their perceptions of the organizational environment, differences among faculty in the three fields emerged in their overall view of the organizational climate (their level of trust in the administration and in faculty groups to act in good faith, their perception that the institution encourages them to work for the collective good of the unit, and their assessment that rewarded faculty are those oriented primarily toward professional accomplishments), their assessment of consensus in curricular matters and support for teaching on their campus, and in their understanding of their institution's regard for research.

Finally, the ANOVAs revealed differences in teaching behavior. Faculty in different fields placed varying emphasis on requiring student writing and research activities, individualizing instruction, and developing their courses. Further, they differed on the balance they

struck between scholarship/professional growth (time spent enhancing one's knowledge that does not necessarily result in a publication) and teaching and on their participation in teaching dissemination activities (publishing chapters in books, writing for the popular press)[2]. Differences among fields also appeared in research behavior including scholarly involvement (attending presentations/lectures, making presentations locally, discussing scholarship with colleagues at meetings), association activity, traditional publishing activities (percentage of time devoted to research, publications in the past two years, article submission and publication), and active scholarship (number of fellowship applications submitted in the past two years and percentage of time devoted to scholarship).

The t-tests revealed differences between faculty with the Ph.D. and their non-Ph.D. colleagues. With respect to beliefs about teaching and research, the doctoral faculty were less committed to teaching, less personally devoted to teaching, but more devoted to intellectual development and the liberal arts than the faculty without the degree. Doctoral faculty reported more research competence and greater overall career satisfaction (general positive feelings about the institution, likelihood of choosing the faculty career again, and self-assessment of career success compared to like faculty). The two groups also differed on three environmental factors: Ph.D.s had a less positive overall view of the organizational climate (faculty members' level of trust of the

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[2] The factor called dissemination did not load on structures with teaching or research variables. We made the decision that dissemination would more likely be a measure of dissemination of teaching activities and practices than disciplinary research activities and, therefore, treated it as a teaching behavior.

administration as well as established faculty groups, their perception that the institution encourages faculty to work for the good of their unit, and their assessment that rewarded faculty are oriented primarily toward professional accomplishments). Further, the faculty with the degree indicated that their institution values research but does not support scholarship, while their non-Ph.D. colleagues reported the reverse. Regarding teaching behaviors, Ph.D.s reported less time spent on course development and more on teaching dissemination activities. Further, with respect to research behaviors, doctoral faculty engaged more in scholarly activities, journal publishing, active grant-getting, but less in association activity.

Only three differences revealed themselves when the Ph.D.s were subdivided into two groups based on the timing of doctoral study. As indicated by their perception of their effect on student outcomes, faculty who received the degree before they were hired at the current institution reported more teaching competence. These faculty members also assessed their environment as less supportive of scholarship, and they reported less involvement in professional association activity, a research behavior.

When controls were placed on field and faculty with the Ph.D. were compared with their non-Ph.D. colleagues, the t-tests indicated 11 significant differences among the humanists. Respondents with the degree reported more commitment to and competence in research, greater overall career satisfaction, and assessments that the environment values research but does not support scholarship. Regarding teaching behavior, doctoral faculty indicated they are involved in fewer course development activities and more written teaching dissemination

activities than the non-doctoral faculty. Doctoral faculty were also more likely to be active grantspersons and traditional publishers; they also participated in more editorial activities. On the other hand, their non-doctoral colleagues were more involved in association activities

Among the social scientists, only six differences appeared between those with and without the Ph.D. Like the humanists, these Ph.D.s reported greater commitment to and competence in research. Doctoral faculty also reported requiring writing and research activities for students more than those without the degree. On three research behaviors, Ph.D.s indicated more traditional journal publication and editorial involvement but less involvement in scholarship activities.

Natural scientists with the doctorate differed the most from their non-Ph.D. counterparts. Differences emerged on six beliefs. The natural science Ph.D.s reported less commitment, less personal devotion to teaching, and less devotion to intellectual development and the liberal arts. On the other hand, they were more concerned about discipline content and process, viewed student motivation more positively, and were more personally committed to research. The doctoral faculty reported greater research competence and overall career satisfaction than their colleagues without the degree. On two environment factors, faculty with the degree had a less positive view of the organizational climate and a less positive perception of the institution's support for scholarship. Finally, the two groups of natural scientists exhibited differences in four behaviors: in their teaching, Ph.D. natural scientists were less likely to require student writing and research activities, and in research, they were more likely to be active grantspersons and journal publishers but not to be involved in professional associations.

Predicting Variations in Beliefs/Perceptions. Hierarchical multiple regression analyses were used to evaluate the effect of doctoral preparation on beliefs/values, personal competence, sense of satisfaction as a community college faculty member, perceptions of the organizational environment, and professional behavior. Field of preparation/teaching was entered into the regression first, followed by Ph.D. status, and then timing of doctoral study. This order enabled us to identify any systematic variations by field and to estimate any differences that might result from simultaneously studying in a graduate university and teaching in a community college. The results are summarized in Table 2.

With regard to teaching beliefs, the data show that humanists value individualized instruction more than the natural and social scientists. Both humanities and social science faculty were less committed to teaching, did not value student competition as much, and were less concerned about transmitting discipline content and process than their natural science counterparts. The doctorate by itself had no significant effect on faculty beliefs, but doctoral humanities faculty reported more devotion to intellectual development and the liberal arts than the doctoral faculty in the other two fields. Humanists and social scientists with Ph.D.s reported less personal devotion to teaching than the doctorally-prepared natural scientists. All faculty, regardless of discipline or degree, agreed about student motivation, about their concern for student personal and social development, and about their concern for who should control course content and pace.

On reports of teaching competence and ability to deal with difficult classes, no differences among faculty by field or degree emerged.

Regardless of degree, both social science and humanities faculty felt they had significantly less effect on student outcomes than did their natural science colleagues.

With respect to their teaching environment, both Ph.D. and non-Ph.D. natural scientists reported significantly greater unit-level curriculum consensus than did the humanities and social science faculty. Humanists reported less departmental curriculum consensus and collegial commitment to teaching than faculty in the other two fields. Faculty in all three fields had similar perceptions of the level of support for teaching and the pressures to teach in a particular way; they also acknowledged that their disciplines affect the way they teach. Holding the doctorate made no difference in these views of the teaching environment.

Where the Ph.D did not have significant direct effects, discipline differences in teaching behavior and effort in teaching were present. Humanists and social scientists reported requiring more research activities of students and a stronger preference to spend time on scholarship. Further, humanities faculty report fewer individualized-instruction activities (independent studies, tutorials, and internships), and the social science faculty do less course development than their colleagues in the humanities and natural sciences. No teaching behavior could be predicted by degree alone; nevertheless, Ph.D. humanities faculty do significantly more information dissemination through publishing chapters in books and writing for the popular press than the other faculty. Humanists and social scientists with doctorates report spending significantly less of their time on teaching than their natural science counterparts. Finally, all faculty, regardless of field or degree,

indicate that they exchange teaching expertise with colleagues at a similar rate.

Faculty beliefs about research were significantly different for doctorally-prepared humanities and social science faculty who report a stronger personal commitment to research than the natural science faculty. Similarly, competence in research differed, and humanist Ph.D.s reported greater overall research competence than either of the other groups. All Ph.D. faculty, including those who completed the degree during their career, report that the environment in their institution is less favorable for scholarly activities when compared with their non-Ph.D. colleagues. However, humanists with the doctorate report that the institutional environment values research.

Regarding research behavior, both social science and humanities faculty engage in more scholarly activities than the natural scientists, and humanities faculty are more involved in on-campus scholarly activities than either of the other two groups. Ph.D. faculty were significantly more active in writing grants and in reviewing and editing for journals. The Ph.D. humanists did more journal publishing, but their counterparts without the degree were more involved in association activities. Faculty who completed their degree while teaching at their current institutions did more of both. Doctorally-prepared faculty in the humanities and social sciences, and those who have completed their degree while at their present college, devoted more time to research activities than did the natural scientists. Faculty without the Ph.D. and those in the humanities and social sciences devoted more time to scholarship.

When reporting on the service role, no differences appeared among faculty groups in either their commitment to or actual service to their institutions. Except for the humanists' perception that they have significantly less effect on department decision-making, no differences emerged among faculty groups in their perception of their ability to influence academic decisions. All faculty groups reported the same level of campus committee work, but those holding the doctorate did report more time devoted to all service activities.

All faculty groups report similar views of the general environment with regard to institutional mission (relative emphasis of career and liberal arts) and allocation of resources. All groups also reported a similar level of satisfaction with their current salaries. However, the social science faculty had a significantly less positive view of organizational climate than their humanities and natural science colleagues. Finally, humanities Ph.D.s rated their overall career satisfaction the highest of the three fields.

Predicting Faculty Behavior and Effort. In the final hierarchical multiple regression analysis, the belief, competence, satisfaction, and organizational environment perceptions were used along with the field, degree, and timing of degree variables as predictors of behavior. The new predictors were entered into the regression as a group after field, degree, and timing of doctoral study. This order of entry allowed us to evaluate the separate and combined effects of career socialization (field, degree, timing of study) and individual differences in beliefs, competence, satisfaction, and organizational perceptions on faculty behavior.

When the regressions were run for the teaching behavior and effort outcomes, 23 variables had significant effects, and the R^2 ranged from .128 to .538. (See Table 3 for a summary of the data.) The respondents' field of teaching more often influenced their teaching than either their level of preparation or the timing of study. Respondents from the humanities and social sciences were more likely than natural scientists to emphasize students' research and writing skills. However, humanities faculty were less likely to engage in individualized teaching activities (e.g., tutorials, independent studies, etc.) and more likely than natural scientists to write book chapters or for the popular press. Social scientists were more apt to devote similar amounts of time to their scholarship whereas they spent less time on the development of new course/lab materials, on team teaching, or on teaching generally. Doctoral preparation had little direct effect on the teaching outcomes. In only two cases did having the Ph.D. significantly increase the amount of explained variance in teaching. Further, the timing of study did not contribute greatly to differences in teaching behavior among those with the doctorate. Individuals' perceptions that their colleagues were committed to teaching had strong direct effects on their level of engagement in individualized instruction, whereas their personal commitment to teaching led to greater amounts of time spent on teaching in general.

A total of 21 variables had significant direct effects on one or more of the research behavior and effort outcomes. Table 4 shows that the R^2 ranged from .105 to .425. The data displayed in Table 4 also indicate that humanities faculty were most likely to be involved in professional association activities (organizing meetings, etc.), while both social

scientists and humanists were more likely than natural scientists to give time to scholarship. Doctoral preparation, on the other hand, had a negative influence on association activity but a positive impact on publication rate as well as journal editorial and review work. The timing of doctoral studies was a significant predictor of journal publication. Those faculty members who finished their degrees after they became community college professors at their current institutions were more likely to publish and to be active in professional associations. With one exception, association activity, individual beliefs and perceptions had the strongest direct effects on research behavior. Among these, one's sense of competence as a researcher and commitment to research or teaching had the highest betas. In all instances, the changes in R^2 suggest doctoral preparation increased the amount of variation in research behavior. However, the greatest change in R^2 always occurred when beliefs and perceptions were entered into the model, and in most cases the direct influences of field and preparation on the predicted behavior declined.

The service behavior factor used in the analysis was in essence a measure of participation in organizational decision-making, e.g., involvement in both unit and campus-wide committees. The service effort measure was a summary index of time given to activities both on and off campus. None of the field or preparation variables had a significant direct effect on the first outcome. However, faculty members with doctorates were likely to give more time to overall service on and off campus. The fact that doctoral preparation did not affect campus committee work but did have an impact on the summary time measure suggests off-campus involvement may be greater among

the doctorally-prepared faculty. Respondents who thought they could personally influence unit and campus decisions and who were devoted to their colleges were more likely to be involved in campus service. This faculty subgroup was also more likely to spend time on service activities. The influence of beliefs and perceptions is clearly evident. The changes in R^2 when these variables were entered into the equation ranged from an increase of .132 to .453. (See Table 5.)

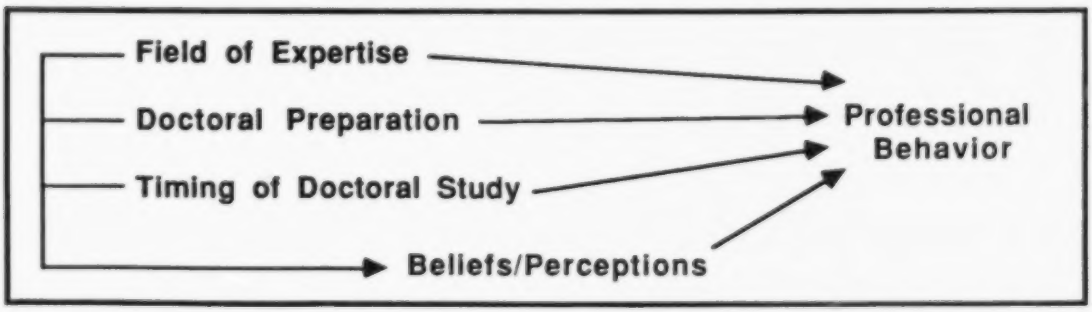
Discussion

The NCRIPTAL survey data were, for several reasons, well suited to this study: the national sample was drawn from many geographic regions and from rural, urban, and metropolitan areas; the sample size and dispersion across the career variables (field, doctoral preparation, and time of graduate study) permitted meaningful comparisons across faculty subgroups; and the questionnaire included multiple items for each of the belief/perception predictor variables and behavior outcomes. There were, however, two key limitations that restrict our ability to draw generalizations about community college faculty members. First, only full-time faculty members from eight disciplines were surveyed. This sampling strategy enhances our knowledge of individuals who teach in the traditional arts and sciences areas but does not allow us to compare them with their counterparts in the more career-oriented programs or with part-time faculty members. Furthermore, the disciplines were grouped into fields; consequently, certain epistemological differences may be masked as a result. Second, the index for timing of graduate study was very global, indicating only if the

doctoral degree was completed before or during the respondents' tenure at their current institution. We do not know if those persons who completed their degrees before they were appointed at their present college had taught concurrently at another community college.

Nevertheless, within these constraints we are able to comment on: (a) the direct and indirect effects of field and doctoral preparation on teaching, research, scholarly, and service behavior; (b) the direct effects of field and preparation on beliefs and perceptions; and (c) the direct effects of beliefs and perceptions on behavior. These influence paths are represented schematically in Figure 1.

Figure 1. Direct and Indirect Effects of Predictors on Behavior



When teaching behavior was the outcome, the faculty members' field of study (humanities, social sciences, or natural sciences) exerted either direct or indirect effects on all six teaching behaviors and the item indicating percentage of full-time appointment spent on teaching. (See Figure 2.) The timing of one's graduate studies influenced how often one engaged in individualized instruction both directly and indirectly, through the perception that the college encourages keeping up with one's discipline. Doctoral preparation, however, had only indirect effects on three teaching outcomes: engaging in individualized instruction, percentage of full-time appointment spent on teaching, and engaging students in written research activities. The effect of doctoral preparation on individualized teaching was transmitted through their commitment to research, whereas its effect on engaging students in research activities was through a personal commitment to students' intellectual development and the liberal arts as well as a strong commitment to teaching. Its influence on level of effort given to teaching was mediated by respondents' sense of competence as researchers.

As one can see in Figure 2, several of the belief/perception variables that had significant effects on the teaching behaviors were not affected by field or the doctoral preparation measures. Clearly, factors other than those in the model were affecting the faculty members' perceptions of themselves and their work environments. The number of respondents from each community college was not of sufficient size to allow us to control for institution and see if there were differences between campuses in faculty beliefs, perceptions, and behaviors.

However, the data set does include other variables such as years of teaching experience, age, and gender that could be taken into account in future analyses. Other researchers ought to consider gathering more specific data on classroom experiences that might account for different perceptions of students, instructional goals, etc. For example, it would be important to know what course levels are taught.

The t-tests, ANOVA, and hierarchical multiple regressions also indicated that individual variations in beliefs and perceptions that the career variables often did not account for had strong direct effects on all but one of the research behaviors. (See Figure 3.) Association activity was not influenced by personal beliefs and perceptions. A faculty member's field predicted directly how often he or she engaged in professional association activities and the percentage of full-time effort given to scholarship. Doctoral preparation accounted for differences in journal editorial work and association activities: when one completed the degree influenced how often he or she published in journals and engaged in association activities. Field indirectly influenced six of the research behaviors, primarily through self-assessed research and teaching competencies. Doctoral preparation had an indirect effect on participation in campus-sponsored scholarly activities. This influence can be traced through the respondents' belief that scholarship was encouraged on their campus. The timing of doctoral studies also had indirect effects on how often respondents participated in campus-sponsored scholarly activities and how involved they were in scholarly activities. (See Figure 3.)

In light of these and other findings, it seems that generalizations about the negative consequences of hiring doctorally-prepared faculty

are not fully supported. Although doctoral preparation did influence teaching behavior, the effects were usually indirect. The changes in behavior due to either or both highest degree earned and timing of graduate study were statistically significant only in two instances--engaging in scholarly teaching-related behavior and time spent on teaching. Field of expertise and individual beliefs/perceptions accounted for the most variance. In fact, field, along with highest degree, predicted how much time one gave to teaching and both had negative beta coefficients. Consequently, critics' concern about the level of teaching effort among doctorally-prepared faculty may be justified, yet at the same time these individuals need to be aware that people from different fields do not spend the same amount of time on teaching.

This is not to say that doctoral preparation had no effect on faculty behavior. On the contrary, when this variable entered the hierarchical regressions for research, the changes in R^2 were often significant. Doctorally-prepared faculty reported greater involvement in grant preparation, journal editing, association activities, more time spent on research, and higher journal publication rates. Hence, it seems reasonable to assume that individuals who are prepared as researchers may eventually alter the community college environment. Nevertheless, the changes are more likely to be in terms of faculty engagement in research activity. Some of these changes may have negative consequences for students to the extent that time spent on research may detract from teaching quality. However, positive effects may also occur such as improvements in the currentness of information being transmitted to students, the acquisition of grants that may enhance

instructional programs, etc. Clearly, community college administrators must wrestle with the issue of how to best utilize this faculty talent.

Finkelstein (1984) asserts that faculty behavior is guided almost exclusively by individual beliefs and standards of performance. The data from this study seem to support this assertion and to suggest that these beliefs are not influenced greatly by doctoral preparation per se. The relatively strong influence of field on teaching beliefs and behaviors, combined with the fact that respondents' concern for discipline content and process did not exert a direct effect on teaching behavior, suggest faculty may be open to information about how to best teach their discipline. Community college administrators can build on these beliefs and perhaps change teaching behavior to the extent that they are able to find ways to inform faculty members about teaching developments within their disciplines.

Finally, the data on career satisfaction suggest that doctorally-prepared individuals are not dissatisfied with their careers as community college faculty members. Although the amount of satisfaction accounted for was small (R^2 = .031), the significant effects of field and level of preparation were positive. It may well be, as London (1978) suggests, that these professors have resolved any disappointment they may have experienced by redefining themselves and their careers in ways that bring them more in line with the expectations of the community colleges that employ them. The data do not enable us to elaborate the process by which the inconsistencies may have been resolved; however, the question appears to be one that warrants further study.

Our results also raise a number of other issues for further study. First, what is the motivation for community college faculty to complete the Ph.D. while they continue teaching in their community colleges? Are they doing so in order to make a career change? Are they doing so in order to increase their salaries or influence on campus? Or, on the other hand, did an appointment that they considered as temporary while in graduate school become permanent? Second, are community college faculty who complete Ph.D.s concurrently with their appointments doing degrees in the disciplines in which they are teaching? We are unable to distinguish those faculty who completed their Ph.D. in the discipline from those who were in education, and we know from earlier interviews that a community college faculty member may have a masters degrees in a discipline but a Ph.D. in education. Are these differences important when we look at faculty behavior? Third, among the doctorally prepared, why did they come to the community college? Did they specifically prepare for and choose the community college? Answers to these and other questions about community college faculty members' motivation and career paths may help to explain more of the differences in faculty role performance

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APPENDIX A: FACTOR NAMES, VARIABLE NAMES, LOADING FACTORS

PART ONE: BELIEFS, ASSUMPTIONS, AND VALUES

GROUP I: BELIEFS—TEACHING

FACTOR 1: BELIEVE STUDENTS MOTIVATED	(Eigen Value = 3.55662)
BTHINK: students think independently	.71526
BSHARE: students share ideas	.63362
BWRKIND: students work on their own	.62067
BOVERWHM: students will feel overwhelmed by my requirements	-.50767
BLCKINT: students lack interest in the subject	-.69049
BLRNREQ: students learn what's required	-.71082
FACTOR 2: CONCERN ABOUT PERSONAL AND SOCIAL DEVELOPMENT	(Eigen Value = 2.39356)
ISOCROLE: goal is improving students' social roles	.76357
IPERSDEV: goal is students' personal development	.72865
IADVSES: goal is advancing students' socioeconomic status	.66466
FACTOR 3: TEACHER COURSE CONTROL VALUED	(Eigen Value = 2.32447)
BCCONT: teacher controls course content	.84855
BPACET: teacher sets pace of course	.83515
BCCONTS: teacher and students set content cooperatively	-.52143
FACTOR 4: VALUES INDIVIDUALIZED INSTRUCTION	(Eigen Value = 1.81867)
BFREQFB: students need frequent feedback	.67072
BCHALNGE: students will be appropriately challenged by course requirements	.60078
BSTUDIS: conditions allow students to discover new principles	.57564
BCCRELS: course content is relevant to students' lives	.52779
FACTOR 5: DEVOTION TO INTELLECTUAL DEVELOPMENT AND LIBERAL ARTS	(Eigen Value = 1.52798)
IREASCOM: goal is developing reasoning and communication	.68316
IASSTUD: goal is helping interested students	.60294
BYDEDLA: dedicated to the liberal arts	.55022
FACTOR 6: COMMITMENT TO TEACHING	(Eigen Value = 1.40718)
WPTCH: personal preference for teaching	.88005
WPSCHOL: personal preference for scholarship	-.82487
FACTOR 7: PERSONAL DEVOTION TO TEACHING	(Eigen Value = 1.24811)
BYTEACH: committed to teaching	.82925
BYSTUD: concerned about students	.69880
FACTOR 8: ASSUME STUDENT COMPETITION IS GOOD	(Eigen Value = 1.15786)
BSTUCOMP: fostering competition improves learning	.73921
BCOMPETE: students learn by outperforming one another	.71707
FACTOR 9: CONCERN ABOUT DISCIPLINE CONTENT AND PROCESS	(Eigen Value = 1.08217)
IFACDISC: concern about transmitting discipline	.77807
IPROCESS: concern about demonstrating a process	.73278

GROUP II: BELIEFS—RESEARCH

FACTOR 1: PERSONAL COMMITMENT TO RESEARCH	(Eigen Value = 2.26795)
WPRSRCH: % time preference for research	.85609
BYRESCRCH: highly committed to research	.85111
DTCHRES: interests lie primarily in teaching	-.87605

GROUP III: BELIEFS—SERVICE

FACTOR 1: COMMITMENT TO SERVICE AND INSTITUTION	(Eigen Value = 1.13207)
BYDEVINT: devotion to the institution	.75235
WPSERV: % time preference for service	.75235

PART TWO: COMPETENCE, EFFICACY

GROUP I: COMPETENCE—TEACHING

FACTOR 1: TEACHING COMPETENCE	(Eigen Value = 2.11022)
SYTEACH: teaches effectively	.76474
SYLECT: excellent lecturer	.75200
SYWRKSTU: works well with students	.56245
FACTOR 2: DEALING WITH DIFFICULT CLASSES	(Eigen Value = 1.29707)
ETCHUNP: underprepared students affect teaching negatively	.81864
ESTURNG: wide range of abilities most difficult to teach	.80961
FACTOR 3: EFFECT ON STUDENT OUTCOMES	(Eigen Value = 1.04418)
FSTUCACH: influence on student achievement	.81025
FSTULRN: influence on student learning	.72963

GROUP II: COMPETENCE—RESEARCH

FACTOR 1: RESEARCH COMPETENCE	(Eigen Value = 1.64095)
SYPUBL: publishes	.78128
SYGRANT: obtains grants	.68883
FPUBLCT: influence on own work being published	.62815

GROUP III: COMPETENCE—SERVICE

FACTOR 1: DEPARTMENT DECISION INFLUENCE	(Eigen Value = 3.04345)
FNEWFAC: influence on choice of new faculty	.75164
FDEPTDN: influence on department curriculum decisions	.69758
FNCHAIR: influence on choice of next chair	.67794
FREVCRIT: influence on criteria for review of faculty	.62166
FRESOUR: influence on allocation of resources	.55384
FACTOR 2: ACADEMIC DECISION INFLUENCE	(Eigen Value = 1.00141)
FSTUADM: influence on admission requirements	.86633
FGRADREQ: influence on graduation requirements	.81257

PART THREE: CAREER SATISFACTION

GROUP I: GENERAL SATISFACTION WITH CAREER

FACTOR 1: CAREER SATISFACTION	(Eigen Value = 1.87635)
DINTFEEL: general feelings about institution	.78328
DFACMEM: would choose faculty career again	.75845
DSUCCESS: self-assessment of success positive, compared to like faculty	.69664

FACTOR 2: SALARY SATISFACTION	(Eigen Value = 1.14542)
DSALARYO: salary comparison with peers at other institutions	.81702
DSALARYI: salary comparison within institution	.79180

PART FOUR: ENVIRONMENT

GROUP I: ENVIRONMENT—GENERAL

FACTOR 1: VIEW OF ORGANIZATIONAL CLIMATE	(Eigen Value = 2.34881)
ETRSTADM: faculty can trust administration to act in good faith	.77198
EDEPTSER: institution encourages work for collective good of unit	.72725
ETNSTFAC: faculty can trust established faculty groups to act in good faith	.61520
EREWFAC: rewarded faculty are oriented primarily toward professional accomplishments	.57504
FACTOR 2: VIEW OF EDUCATIONAL GOVERNANCE AND SUPPORT	(Eigen Value = 1.22389)
ELIBPROF: institutions' goals more toward careers	.66751
EUNITSHR: some units get more than their share of resources	.56481
BVDEDLA: institution values devotion to the liberal arts	-.61823
FACTOR 3: ENVIRONMENT VALUES INVOLVEMENT	(Eigen Value = 1.08934)
SVKNSYS: institution values knowing how to work the system	.77699
BVDEVINT: institution values devotion to institution	.72565

GROUP II: ENVIRONMENT—TEACHING

FACTOR 1: SUPPORT FOR TEACHING	(Eigen Value = 3.83567)
BVTEACH: institution values commitment to teaching	.88406
BVSTUD: institution values concern for students	.87039
SVTEACH: institution values effective teaching	.85924
SVWRKSTU: institution values working well with students	.85022
SVLECT: institution values an excellent lecturer	.70708
FACTOR 2: DISCIPLINE IMPACTS TEACHING	(Eigen Value = 1.17249)
EDISTCH: changes in discipline necessitated changes in teaching method	.85077
EDISAS: changes in discipline necessitated changes in courses	.84908
FACTOR 3: CURRICULUM CONSENSUS AND SUPPORT	(Eigen Value = 1.57076)
ECOLRES: collegial resources support teaching efforts	.70538
ETCHSUP: services support teaching efforts	.66494
ECURAGR: agreement in unit about the curriculum	.56664
FACTOR 4: COMMITMENT TO TEACHING	(Eigen Value = 1.42090)
ECOMUNIT: faculty in unit more commited to teaching than adding to discipline	.85433
ECOMTCHI: faculty in institution more commited to teaching than research in discipline	.86382
FACTOR 5: ENVIRONMENTAL PRESSURE ON TEACHERS	(Eigen Value = 1.12418)
ETCHPRES: pressure from colleagues to teach certain way	.85981
EGRDPRES: pressure from institution to grade certain way	.84107

GROUP III: ENVIRONMENT—RESEARCH

FACTOR 1: ENVIRONMENT VALUES RESEARCH	(Eigen Value = 2.04840)
SVPUBL: institution values publishing	.85497
BVRESRCH: institution values commitment to research	.80300
SVGRANT: institution values getting grants	.74438
FACTOR 2: ENVIRONMENT SUPPORTS SCHOLARSHIP	(Eigen Value = 1.40853)
ESCHLSUP: support services for scholarship enhance my scholarship	.71771
ECOLCRIT: colleagues assist and review my scholarly work	.70318
SVDISC: institution values keeping up in one's discipline	.67408

PART FIVE: BEHAVIOR

GROUP I: BEHAVIOR—TEACHING

FACTOR 1: RESEARCH ACTIVITIES	(Eigen Value = 5.77256)
TRESPAP: require a research paper	.82567
TREQBIB: require annotated bibliographies	.75605
TREVDRFT: review rough drafts of students' papers	.75264
TREQUIR: require style manual/proper writing format	.72048
TSTUDONL: require on-line searches for projects	.69324
FACTOR 2: EXCHANGING EXPERTISE	(Eigen Value = 1.95014
PATTCOLL: attended presentation of colleague on campus	.71704
PATTWRK: attended presentation of visiting lecturer on campus	.69189
PATTVL: attended campus workshop on teaching	.67177
POFFCAM: attended off campus workshop on teaching discipline	.59559
FACTOR 3: INDIVIDUALIZING INSTRUCTION	(Eigen Value = 1.33855)
TINDSTUD: supervise independent studies	.72459
TSUPTUT: supervise tutorials	.68621
TRINTRN: design research internships for students	.57417
FACTOR 4: DISSEMINATION	(Eigen Value = 1.21564)
RCHAPBK: published chapters in a book	.70685
RPOPPRES: written for the popular press	.68374
FACTOR 5: PREFERENCE FOR PROFESSIONAL GROWTH	(Eigen Value = 1.08437)
WSCHOL: % time to scholarship	.86545
WTEACH: % time to teaching	-.73979
FACTOR 6: COURSE DEVELOPMENT	(Eigen Value = 1.00659)
TNEWCRS: develop new materials for course/lab	.68500
STEAMTCH: team teaching	.57110

GROUP II: BEHAVIOR—RESEARCH

FACTOR 1: ACTIVE GRANTSPERSON	(Eigen Value = 4.89374)
RESPROP: submitted a research proposal	.83671
DGRPROP2: # grant proposals submitted in past two years	.73760
RRESRPT: wrote a research report	.61578
FACTOR 2: SCHOLARLY	(Eigen Value = 1.84943)
PATTCOLL: attended presentation by campus colleague	.75064
PATTVL: attended lecture on campus	.69389
PPRESCAM: presented own work on campus	.65893
PINFCON: conversations with colleagues at professional meetings	.52216

FACTOR 3: JOURNAL PUBLISHER	(Eigen Value = 1.34828)
WRESRCH: % time to research	.69098
DPUBAC2: # publications (or accepted for) in past two years	.63080
RPUBSCHA: published a scholarly article	.53942
RSUBART: submitted a scholarly article for publication	.53247
FACTOR 4: EDITORIAL INVOLVEMENT	(Eigen Value = 1.27781)
REDBRDJ: served on journal editorial board	.79024
RREVART: reviewed articles for professional journal	.70553
FACTOR 5: ASSOCIATION ACTIVITY	(Eigen Value = 1.09380)
REDPROC: edited conference proceedings	.82707
RORGMT: organized professional meeting	.77056
FACTOR 6: ACTIVE SCHOLAR	(Eigen Value = 1.01887)
DFELAP2: fellowship application past two years	.72022
WSCHOL: % time to scholarship	.68157

GROUP III: BEHAVIOR—SERVICE

FACTOR 1: CAMPUS COMMITTEE WORK	(Eigen Value = 2.61505)
SCHUNIT: chaired a campus/unit committee	.80332
SCAMCOM: participated in campus committees on issues	.77041
SUNTPROB: conducted a study to help solve a unit problem	.76156
SUNITCUR: played a role in unit's curriculum revision	.76044

Table 1. Differences Between Faculty Subgroups on Predictor and Outcome Measures

Factor	Field			Ph.D.		Degree During Appointment		Field					
								Humanities		Social Sciences		Natural Sciences	
Career	h	ss	ns	No (1)	Yes (2)	Yes (1)	No (2)	No Ph.D. (1)	Ph.D. (2)	No Ph.D. (1)	Ph.D (2)	No Ph.D. (1)	Ph.D. (2)
Beliefs													
BELTEA1	-.006	.151	-.017	.062	-.061	-.040	-.097	.071	-.162	.238	-.030	-.019	.045***
BELTEA2	.021	.062	-.057	-.007	-.014	.115	-.080	.030	-.003	.024	.113	-.055	-.129
BELTEA3	-.056	-.071	.070	-.002	-.028	.028	-.109	-.033	-.128	-.124	.027	.077	.059
BELTEA4	.095[a]	.068	-.110[a]	.005	-.015	.112	-.136	.109	.073	.073	.055	-.106	-.187
BELTEA5	.367[ab]	-.243[b]	-.291[a]	-.114	.181***	.084	.262	.316	.484	-.339	-.047	-.361	-.029*
BELTEA6	-.135[a]	-.122[b]	.207[ab]	.068	-.152**	-.250	-.131	-.111	-.223	-.181	-.014	.316	-.172**
BELTEA7	-.058[b]	-.152[a]	.140[ab]	.090	-.221***	-.237	-.147	-.018	-.159	-.068	-.343	.242	-.203**
BELTEA8	-.218[a]	-.140[b]	.240[ab]	.001	-.044	-.156	.011	-.290	-.065	.014	-.410	.225	.281
BELTEA9	-.265[ab]	-.030[ac]	.318[cb]	.039	-.027	-.104	.081	-.199	-.398	-.007	-.078	.268	.496*
BELRES1	.303[b]	.143[a]	-.272[ab]	-.191	.622***	.709	.484	.112	.757***	-.116	.638***	-.472	.428***
BELSER1	-.054	.049	.025	.013	-.046	-.145	.057	-.088	.006	.103	-.079	.051	-.094
Competence													
COMTEA1	.045	.041	-.055	-.033	.110	.179	.018	.017	.129	-.035	.188	-.076	.023
COMTEA2	-.051	-.025	.058	-.024	.052	-.065	.170	-.049	-.037	-.018	-.020	.001	.233
COMTEA3	-.063[b]	-.134[a]	.172[ab]	.049	-.057	-.294	.200**	-.036	-.132	-.051	-.282	.155	.222
COMRES1	.249[a]	.026	-.180[a]	-.120	.442***	.550	.339	.052	.704***	-.134	.349**	-.276	.128**

Table 1. (continued)

Factor Career	Field h	Field ss	Field ns	Ph.D. No (1)	Ph.D. Yes (2)	Degree During Appointment Yes (1)	Degree During Appointment No (2)	Field: Humanities No Ph.D. (1)	Field: Humanities Ph.D. (2)	Field: Social Sciences No Ph.D. (1)	Field: Social Sciences Ph.D (2)	Field: Natural Sciences No Ph.D. (1)	Field: Natural Sciences Ph.D. (2)
Competence (continued)													
COMSER1	-.095[a]	.032	.097[a]	.002	.015	.116	-.050	-.134	-.010	-.034	.140	.131	-.053
COMSER2	-.021	-.074	.039	-.018	-.005	-.164	.088	.005	-.107	-.060	-.100	-.021	.228
Satisfaction													
SATCAR1	.110[a]	.045	-.093[a]	-.082	.254***	.227	.299	.018	.301*	-.015	.196	-.188	.233***
SATCAR2	-.003	-.038	.012	.022	-.066	-.138	-.039	.014	-.033	.041	-.207	.013	-.002
Environment													
GENENV1	-.035	-.151[a]	.095[a]	.042	-.138*	-.134	-.181	-.051	-.022	-.113	-.246	.187	-.224*
GENENV2	.067	-.070	-.091	-.021	-.025	.057	-.081	.007	.164	.037	-.265	-.075	-.118
GENENV3	.109	-.074	-.036	.008	.044	-.021	.134	.069	.181	-.074	-.075	-.018	-.065
ENVTEA1	-.035	-.061	.071	-.019	.070	.081	.100	-.062	.075	-.089	-.011	.046	.126
ENVTEA2	.030	-.048	-.054	-.026	-.037	-.004	-.125	.062	-.065	-.038	-.039	-.096	-.004
ENVTEA3	-.118[a]	-.087[b]	.176[ab]	.043	-.092	-.021	-.092	-.095	-.197	-.046	-.174	.191	.123
ENVTEA4	-.177[ab]	.097[a]	.115[b]	-.017	.047	-.023	.048	-.249	-.003	.133	.073	.117	.099
ENVTEA5	.036	-.084	.038	.032	-.016	.035	-.009	.042	.008	-.022	-.175	.043	.070
ENVRES1	.183[ab]	-.187[a]	-.051[b]	-.051	.165**	.316	.082	.088	.368*	-.243	-.131	-.089	.092
ENVRES2	-.041	-.100	.088	.087	-.258***	-.076	-.386*	.043	-.246*	-.014	-.288	.175	-.254**

Table 1. (continued)

Factor Career	Field h	Field ss	Field ns	Ph.D. No (1)	Ph.D. Yes (2)	Degree During Appointment Yes (1)	Degree During Appointment No (2)	Field: Humanities No Ph.D. (1)	Field: Humanities Ph.D. (2)	Field: Social Sciences No Ph.D. (1)	Field: Social Sciences Ph.D (2)	Field: Natural Sciences No Ph.D. (1)	Field: Natural Sciences Ph.D. (2)
Behavior													
BEHTEA1	.696[bc]	-.180[ac]	-.659[ab]	-.079	.079	.110	.110	.712	.651	-.086	-.354*	-.751	-.336***
BEHTEA2	.037	-.057	.027	.002	.046	.104	.059	.023	.041	-.142	.099	.037	.011
BEHTEA3	-.169[ab]	.166[b]	.061[a]	.001	-.032	-.076	-.075	-.165	-.208	.205	.091	.047	.106
BEHTEA4	.213[a]	-.024	-.214[a]	-.101	.236***	.287	.168	.033	.637***	-.104	.123	-.210	-.212
BEHTEA5	.102[ac]	.387[bc]	-.233[ab]	.006	.055	.088	.043	.116	.098	.450	.199	-.271	-.120
BEHTEA6	.037[a]	-.328[ab]	.151[b]	.062	-.118*	-.136	-.078	.128	-.158*	-.329	-.334	.170	.113
BEHRES1	.085	.165	-.075	-.065	.283***	.273	.283	-.037	.319*	.118	.268	-.166	.248*
BEHRES2	.102[a]	.107	-.120[a]	-.038	.144	.208	.086	.085	.137	-.030	.356	-.148	.002
BEHRES3	.148[a]	-.013	-.200[a]	-.159	.317***	.416	.172	.017	.471**	-.029	.355**	-.281	.088**
BEHRES4	.106	-.111	.050	-.071	.303***	.256	.348	-.079	.481***	-.228	.102*	.007	.212
BEHRES5	.144[ab]	-.155[a]	-.118[b]	.065	-.239***	.023	-.466***	.264	-.100*	-.094	-.261	-.036	-.406***
BEHRES6	.134[a]	.199[b]	-.214[ab]	.002	-.022	-.056	.042	.033	.278	.454	-.245*	-.197	-.255
BEHSER1	.021	.028	-.006	-.018	-.073	.147	.085	-.012	.072	-.006	.094	-.028	.056

Note: a, b, c = groups with significant differences at $p < .05$

* = $p < .05$
** = $p < .01$
*** = $p < .001$

Table 2. Impact of Field, Doctoral Preparation and Timing of Graduate Study on Beliefs, Perceptions, and Behavior

	Predictors				
Outcomes	Social Science	Humanities	Degree	Degree Time	R^2
Beliefs					
BELRES1	.127**	.237***	.331***	.039	.185***
BELTEA1	.074	.012	-.063	.008	.008
BELTEA2	.048	.035	-.018	.037	.004
BELTEA3	-.059	-.063	-.005	.006	.004
BELTEA4	.069	.091*	-.045	.096*	.018*
BELTEA5	.010	.304***	.117**	-.040	.106***
BELTEA6	-.129**	-.160***	-.076	-.021	.037***
BELTEA7	-.111*	-.090*	-.144***	.068	.035***
BELTEA8	-.155***	-.220***	.011	-.019	.046***
BELTEA9	-.142***	-.283***	-.008	-.032	.070***
BELSER1	.011	-.038	-.032	.027	.003
Competence					
COMRES1	.047	.173***	.225***	.038	.091***
COMTEA1	.031	.040	.053	.023	.006
COMTEA2	-.035	-.052	.053	-.052	.006
COMTEA3	-.117**	-.107*	-.017	-.058	.021**
COMSER1	-.032	-.102*	-.002	.069	.012
COMSER2	-.047	-.031	.008	.010	.002
Career Satisfaction					
SATCAR1	.042	.088*	.154***	-.056	.031***
SATCAR2	-.012	.003	-.025	-.053	.004
Environment					
GENENV1	-.088*	-.053	-.069	-.003	.013
GENENV2	.010	.081	-.001	-.029	.006
GENENV3	-.020	.066	.004	.036	.008
ENVRES1	-.070	.099*	.085*	.041	.032***
ENVRES2	-.062	-.053	-.165***	.079*	.032***

Table 2. (continued)

Outcomes	Predictors				
	Social Science	Humanities	Degree	Degree Time	R^2
Environment (continued)					
ENVTEA1	-.058	-.056	.054	-.021	.006
ENVTEA2	.000	.037	-.021	.053	.004
ENVTEA3	-.102*	-.142***	-.048	.020	.022**
ENVTEA4	-.009	-.141***	.053	-.058	.024**
ENVTEA5	-.048	-.003	-.026	.033	.004
Behavior					
BEHRES1	.082	.065	.152***	-.012	.032**
BEHRES2	.081	.099*	.063	.019	.017
BEHRES3	.056	.160***	.206***	.101*	.095***
BEHRES4	-.087	.008	.190***	-.022	.041***
BEHRES5	-.002	.137**	-.177***	.111*	.052***
BEHRES6	.166***	.174***	-.030	-.020	.034***
BEHTEA1	.192***	.662***	.011	-.005	.374***
BEHTEA2	-.038	.000	.016	.024	.002
BEHTEA3	.050	-.103*	.012	-.088*	.026*
BEHTEA4	.061	.192***	.131**	.011	.054***
BEHTEA5	.251***	.161***	-.015	.032	.058***
BEHTEA6	-.190***	-.051	-.073	.031	.038***
BEHSER1	.008	.007	.037	.013	.002
Efforts					
WTEACH2	-.204***	-.180***	-.135**	-.037	.076***
WSCHOL2	.201***	.202***	-.098*	.020	.053***
WRESRCH2	.098*	.134**	.188***	.089*	.078***
WSERVIC2	.086	.031	.129**	-.013	.024**

Note: Natural Sciences was used as the constant. The data displayed in this table are for the final step in the regression.

* = $p < .05$
** = $p < .01$
*** = $p < .001$

Table 3. Predicting Teaching Behavior

	BEHTEA1				BEHTEA2			BEHTEA3				BEHTEA4				BEHTEA5				BEHTEA6				WTEACH2			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Field																												
Social Science	c .193	c .192	c .192	c .231	-.034	-.036	-.038	-.022	.043	.044	.050	.053	.077	.062	.061	.030	c .252	c .253	c .251	c .173	c -.196	c -.188	c -.190	c -.185	c -.224	c -.207	c -.204	b -.096
Humanities	c .663	c .662	c .662	c .656	.005	.003	.000	-.019	a -.113	a -.112	a -.103	a -.107	c .209	c .193	c .192	b .132	c .164	c .165	c .161	.070	-.056	-.048	-.052	-.070	c -.201	c -.184	c -.180	-.041
2. Degree		.010	.012	-.000		.022	.016	.039		-.010	.012	-.020		b .134	b .131	.058		-.007	-.015	.002		-.065	-.073	-.081		c -.144	b -.135	-.066
3. Degree Time			-.005	-.014			.024	-.019			a -.088	b -.120			.010	.014			.032	.025			.031	.015			.037	
4. Beliefs/ Percept.																												
ENVTEA5				a .077																								
ENVTEA2				a .079			a .129				b .111												c .152					
SATCAR2				a .078																								
BELTEA7				a .103															a -.114								c .155	
BELTEA9				a .082																							c .110	
COMTEA3				b .116							b .142																	
BELTEA5				b .104																								
BELSER1				a -.085																							c -.396	

Table 3. (continued)

	BEHTEA1				BEHTEA2				BEHTEA3				BEHTEA4				BEHTEA5				BEHTEA6				WTEACH2			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BELTEA6																				c -.611				a -.133				c .417
GENENV1																												a .090
COMRES1																c .332								a .135				b -.103
BELRES1												b .258								c -.325								
ENVTEA4								a -.098																a .105				b .101
COMTEA1								a .105				a .102																
ENVTEA1																												a .072
BELTEA2												a .099																
ENVRES2												a .134																
COMSER1																-.115				a .094								c -.164
GENENV3																				a -.080								b .104
BELTEA3																				a -.088								c .119

Table 3. (continued)

	BEHTEA1				BEHTEA2				BEHTEA3				BEHTEA4				BEHTEA5				BEHTEA6				WTEACH2			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
COMSER2																								a .089				b -.102
ENVTEA3																								b .168b				
COMTEA2																								a -.091				
R^2	c .374	c .374	c .374	c .472	.011	.002	.002	c .128	b .019	b .019	b .026	c .158	c .037	c .054	c .054	c .184	c .057	c .057	c .058	c .351	c .033	c .037	c .038	c .164	c .054	c .075	c .076	c .538

Note: Natural Sciences was used as the constant for field.

a = $p < .05$
b = $p < .01$
c = $p < .001$

Table 4. Predicting Research Behavior

	BEHRES1				BEHRES2				BEHRES3				BEHRES4				BEHRES5				BEHRES6				WSCHOL2				WRESRCH2			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Field																																
Social Science	a .010	.081	.082	.041	.090	.082	.081	.078	.089	.062	.055	-.023	-.067	-.089	-.087	-.095	-.012	.005	-.002	-.018	c .161	c .165	c .166	b .140	c .192	c .202	c .201	c .146	b .128	a .104	a .098	.020
Humanities	.082	.064	.066	-.009	a .109	a .101	a .099	.051	c .199	c .171	c .160	.018	.028	.006	.008	-.031	b .131	b .148	b .137	a .116	c .168	c .172	c .174	a .121	c .193	c .205	c .202	a .118	c .169	b .144	b .135	.009
2. Degree		c .149	c .152	-.011		.067	.063	.056		c .231	c .206	.039		c .185	c .190	a .117		c -.150	c -.178	b -.159		-.035	-.030	-.003		a -.098	-.050			c .210	c .188	-.008
3. Degree Time			-.012	-.030			.019	-.037			a .101	a .076			-.022	-.025			b .111	a .091			-.020	-.010			.020	.012			b .089	.059
4. Beliefs/ Percpt.																																
BELTEA6				b .161												a .141								c -.384				c -.611				a .100
COMTEA2				a -.090																												
GENENV1				a -.104																												a -.084
BELSER1				c .199																				a -.010				b -.140				
CONSER1				a .101																												a .080
COMRES1				c .275								c .304				a .143								c .276				a .110				c .150
SATCAR1				b .126																												

Table 4. (continued)

	BEHRES1				BEHRES2				BEHRES3				BEHRES4				BEHRES5				BEHRES6				WSCHOL2				WRESRCH2			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BELRES1				c .305								c .336												c -.440				c -.373				c .549
ENVTEA2								b .127																								
ENVTEA4								b -.124				a -.090																a -.083				b -.098
COMTEA1								c .208																								
COMTEA3								b .133																								
ENVRES2								b .148																								
GENENV3												a -.093																				
COMSER2																								a .086								
BELTEA3																								a -.107								
BELTEA7																												a -.104				
R^2	.010	b .032	b .032	c .263	.012	a .017	.017	c .242	a .033	c .085	c .095	c .403	.007	c .041	c .041	c .120	b .019	c .041	c .052	b .105	c .032	c .034	c .034	c .189	c .044	c .053	c .053	c .306	c .028	c .071	c .078	c .425

Note: Natural Sciences was used as the constant for field. [illegible]

a = $p < .05$
b = $p < .01$
c = $p < .001$

Table 5. Service Behavior

	BEHSER				WSERVIC2			
	1	2	3	4	1	2	3	4
1. Field								
Social Science	.014	.009	.008	.016	.100[a]	.085	.086	.028
Humanities	.013	.009	.007	.011	.049	.030	.031	-.020
2. Degree		.040	.037	.064		.126[b]	.129[b]	.129[c]
3. Degree Time			.013	-.002			-.013	-.015
4. Beliefs/ Perceptions								
COMSER2				.220[c]				
ENVTEA2				.101[b]				
BELTEA6				-.136[a]				-.220[c]
BELTEA5				.133[b]				.079[a]
GENENV1				-.122[b]				
BELSER1				.224[c]				.602[c]
COMSER1				.326[c]				.181[c]
BELRES1				-.192[a]				-.204[b]
GENENV3								-.088[b]
BELTEA3								-.099[b]
BELTEA7								-.108[b]
BELTEA9								-.097[b]
BELTEA1								-.073[a]
SATCAR1								.139[c]
ENVRES2								-.093[a]
R^2	.000	.002	.002	.262[c]	.008	.024[b]	.024[b]	.477[c]

Note: Natural Sciences was used as the constant for field.

a = $p < .05$
b = $p < .01$
c = $p < .001$

Figure 2.
Paths to Teaching Behavior

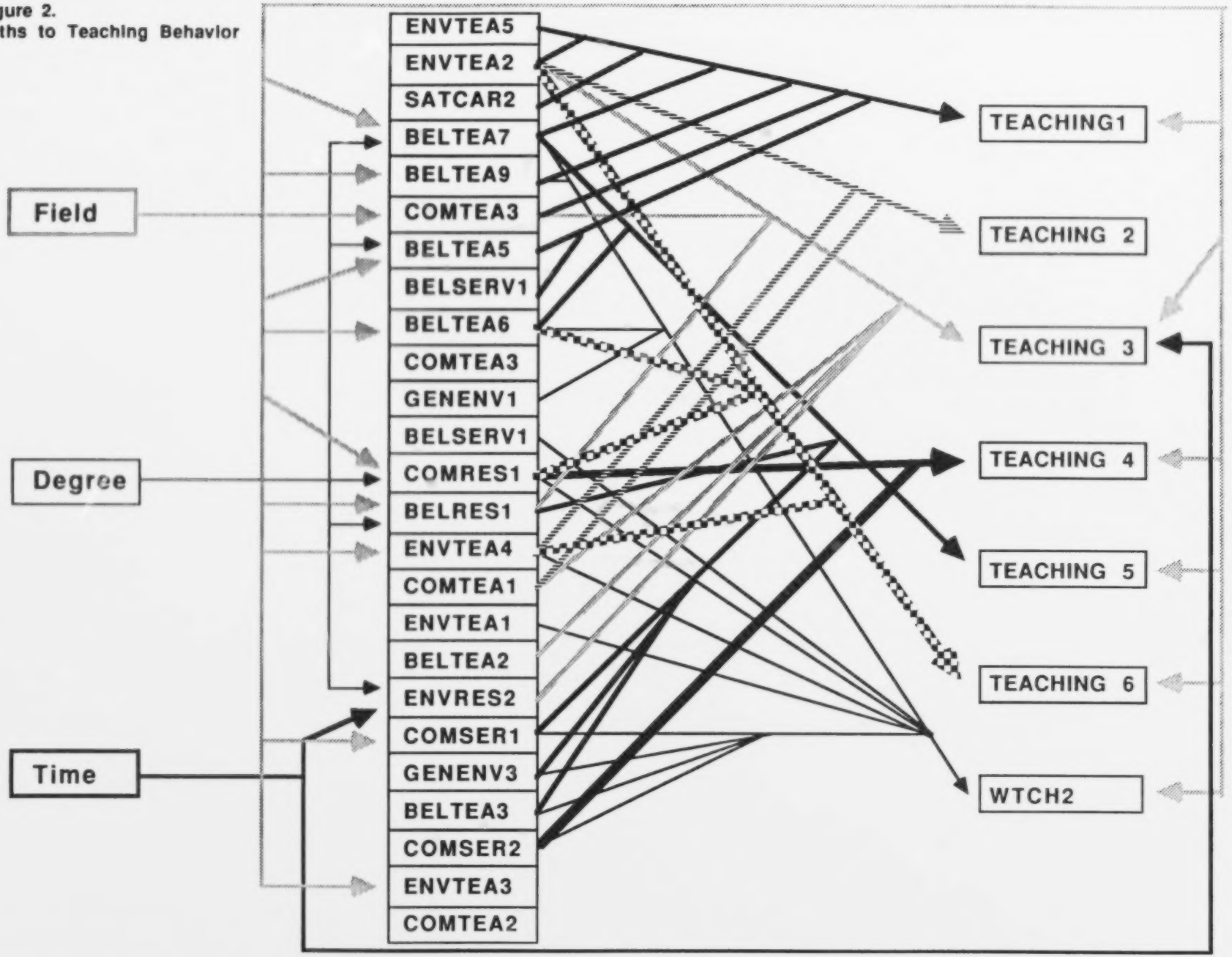

Figure 3.
Paths to Research Behavior